

Daily GLOWBUGS

Digest: V1 #101

via AB4EL Web Digests @ SunSITE

Purpose: building and operating vacuum tube-based QRP rigs

[AB4EL Ham Radio Homepage @ SunSITE](#)

%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%%

Subject: glowbugs V1 #101

glowbugs

Sunday, August 31 1997

Volume 01 : Number 101

Date: Sat, 30 Aug 1997 11:30:53 +0000

From: janax@mail.li.icl.se

Subject: Re: Space charge tubes--the sequel

Jeff wrote:

> Lady and gentlemen---

> Here is a list of 12V "space charge" tubes.

... from Europe. If I remember it correctly, most European car radios from the fifties had vibrator converters and used "normal" tubes.

I have found only 3 low voltage tubes so far:

EF97 remote cutoff pentode

EF98 sharp cutoff pentode

ECH83 triode and pentagrid converter

Characteristic data is available for both 12V and 6V operation. The EF98 can be used as a "power" tetrode by connecting the supressor grid to the plate with a whopping 11 mW output at 12.6V.

All 3 have 6.3V heaters which can be connected in series.

There are US equivalents listed in my book, EF97 = 6ES6, EF98 = 6ET6 and ECH83 = 6DS8.

I will add the data on my web pages ASAP.

Jan, SM5GNN

Date: Sat, 30 Aug 1997 12:41:54 +0300

From: Pentti.Haka@mikrolog.fi

Subject: [none]

Jeff Duntemann wrote:

> using these tubes (sometimes called "space charge" tubes for reasons
> obscure) that contains a front end, a switchable converter, and an 1600 kc

These tubes are very interesting. I remember many '60's vintage European car radios (AM & FM) that had germanium-state audio stages & finals and 12 V plate voltage tubes in the RF & IF section. I also have a R-392, plate voltage 28 volts.
Part of the tubes is this radio probably utilize the same effect.

A very popular home construction project in Finland in the fifties-sixties was a one-tube regen receiver; the tube was a DLL 21 - a directly heated, battery-operated dual pentode from the '30's. The anode voltage was 18 volts although the tube is spec'd for 60-90 volts. Worked beautifully. Built one of these when I was a young kid, but of course mixed up the heater and anode battery terminals - a short flash and a big cry.

As far as I remember, space charge is the cloud of electrons that develops around an emissive heated cathode even when no positive electrode (anode) is present. With a positive electrode, the space charge gradually disappears when the anode current is increased until it is no more - then the tube has reached cathode current saturation.

I guess, when talking about low-plate-voltage tubes, the "space charge" means that the space charge acts as kind of a virtual cathode but I'd better not write anything more about this until I find my Terman, which I seem to have misplaced somewhere.

73 Pentti

=====
Pentti Haka
OH2TC
Pentti.Haka@Mikrolog.Fi
=====

Date: Sat, 30 Aug 1997 06:04:11 -0600
From: Dexter Francis <cwest@xmission.com>
Subject: Re: 26A6 not a 6A6 variant after all

John is correct. Sibley does show the 26A6 as a 6BA6 w/26.5V heater. I jumped the gun on the 26 Volt A6 reference. Sometimes the naming conventions aren't as extensible as they generally seem, eh?

keep 'em glowing

- -df

- -----Visit our Web site at-----

<http://www.xmission.com/~cwest/>
or e-mail to: tubes@usa.net

Date: Sat, 30 Aug 1997 09:04:17 EDT
From: kmlh@juno.com (kmlh @ juno.com)
Subject: Re: Secret origins)

On Fri, 29 Aug 1997 22:53:09 -0700 (PDT) John Kolb <jlkolb@cts.com>
writes:

>Looking in the R-392 schematics, the 26A6 is a pentode, not a twin
>triode, so grabbel Sibley's "Tube Lore", where the 26A6 is listed as
>a 6BA6 with 26.5 V heater. Looking at the curves in my RCA RC-22 tube
>>manual, there's not much detail on the low volts, but looks like the
>curve gets in a very different operating region below +40V or so,
>than at higher voltages.

>

>John Kolb jlkolb@cts.com KK6IL

I have a R-392 PTO, I believe, made by Dubrow Electronics. The tube V-801
is a 26D6. Would appreciate pinout/voltage info on the attached J-809 and
also purpose of the female BNC J-808 and the cable with the male
BNC...one is output but the other?
Final question, what is the frequency range of this PTO? It may signal
the start of a new receiver project.

Woops, another question...has anyone measured the phase noise from this
unit?

Tnx...Carl KM1H

Date: Sat, 30 Aug 1997 10:55:44 -0400 (EDT)
From: leeboo@ct.net (Leon Wiltsey)
Subject: I GOOOOOOOOOOFED

>To:

>From: leeboo@ct.net (Leon Wiltsey)

>Subject: I GOOOOOOOOOOFED

>

>HI GANG

>WHAT I REALLY FOUND OUT i NEEDED TNX TO YOU NICE GUYS WAS FT243 XTAL HOLDERS.

>

THANK THE LORD FOR ALL YOU HAVE

68 yr old semidisabled senior
(stroke got my balance & hand to eye coordination)
ham agn as KF4RCL TECK+ (MUCH HAPPINESS)
BUILD MOST STATION EQUIP
SUB.BA & GB-- NO SOLID STATE

LEON B WILTSEY (Lee) tel. 941 471 3739

4600 Lake Haven BLVD.

Sebring, Fl. 33872 (SEBRING)

WHERE THERE IS NO QRM FROM THE LOCALS

Date: Sat, 30 Aug 1997 09:26:24 -0700

From: Bob Rolfness <rsrolfne@atnet.net>

Subject: FS:Coipy Army TM for Collins

Greetings All

Several weeks ago I listed and sold immediately the Army maintenance manuals for the Collins Radio KWM-2/2A and the 30L-1. I was surprised by the response and to help those that weren't first to respond I had a small number of copies made at a local print shop. I have a couple sets of these copies left.

For Sale: A well done copy of:

TM 11-5820-554-43-1 DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL FOR - AMPLIFIER RADIO
FREQUENCY AM-3979/FRC-93
(COLLINS MODEL 30L-1) August 1976

TM 11-5820-554-34-3 DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL FOR -
RECEIVER-TRANSMITTER RADIO RT-718/FRC-93
(COLLINS MODEL KWM-2/2A), May 1976
with change number 1, January 1989

These manuals are not the quality of the standard Army TM, but seem to be an adoption of material supplied by Collins and look to reflect the commercial manuals (which are also a little terse) but with several additions. Of interest to me are several pages in the KWM2 book detailing Schematic changes and equipment differences with a note saying serial numbers can't be used to identify units because "the manufacture has scrambled serial numbers on his amateur products". The electrical drawing for the KWM-2/2A is a set of 5 11 by 17 inch sheets and the 30L-1 a single 11 by 24 inch sheet.

Price for the KWM-2/2A manual is \$12.50 plus postage

Price for the 30L-1 manual is \$7.50 plus postage

I have been using the \$3 flat rate priority envelope

73's Bob W7VZX

Date: Thu, 28 Aug 1997 22:58:17 -0700

From: Gerald Caouette <ve6nap@oanet.com>

Subject: For sale - Heath frequency counter and some 5933 tubes

Heathkit 30 MHZ frequency counter

C/W Manual

Case has some extra holes that were previously
used for mobile mounting

operates from 12 Volts DC or 120 Volts AC

Would like about \$ 100.00 CDN. = 70 U\$
Shipping EXTRA

I also have a number of Philips ECG -5933 (807 Equivalent vacuum tubes
in original white military packing boxes) 10.00 U\$ each
again shipping is extra

call 403-465-3082 eve
Gerald Caouette
or email
ve6nap@oanet.com

Date: Sat, 30 Aug 1997 10:25:15 -0700 (PDT)
From: John Kolb <jlkolb@cts.com>
Subject: Re: Secret origins)

On Sat, 30 Aug 1997 kmlh@juno.com wrote:

> I have a R-392 PTO, I believe, made by Dubrow Electronics. The tube V-801
> is a 26D6. Would appreciate pinout/voltage info on the attached J-809 and
> also purpose of the female BNC J-808 and the cable with the male
> BNC...one is output but the other?
> Final question, what is the frequency range of this PTO? It may signal
> the start of a new receiver project.
>

The 26D6 is a 6BE6 with a 26.5 V heater.

Unlike the R-390, the R-392 uses a single tube on the PTO as a
pentagrid oscillator-mixer. J808 is the 2.0-3.0 MCS RF (first IF) input,
and P810 is the fixed 455 kHz output. 808 and 810 in my manual,
not 809.

The power connector - pin F = 28V plate, pin E = heater. Don't see
the gnd pin on the schematic, but an ohmmeter should find it OK.

John Kolb KK6IL

Date: Sat, 30 Aug 1997 12:42:29 -0500 (EST)
From: "Roberta J. Barmore" <rbarmore@indy.net>
Subject: Intro!

Hi!

...Since there is no subject I'm more happy to write about <grin>,
herewith is the same dull bio as ever....

Name: Roberta J. Barmore (but I answer to Bobbi or RJ)

Age: Entirely too big a number, but not *that* much, thank you.

Profession: broadcast technician; they call us "engineers" but the guys who drive trains are more likely to have degrees--you don't salute me, I work for a living.

Main BA/glowbug interests: gear from about '35 through '41, some early postwar commercial stuff. Homebrewing small transmitters & receivers.

Married to a non-ham (but he's after a codeless Tech, a good start sez I), I'm very tall (5'9") and can be recognized at hamfests by Bettie Page bangs and (unless the day is perfectly sunny) linesman's boots; you never know what you might have to step in while hunting good parts & gear!

Best DX: working VP2VAT a long time ago, using an HW-16 and antenna lower than the landing the station was set up on--the feedline ran *down* to the dipole!

I have been a licensed amateur off and on since 1972. Started out with a DX-20 and MR-1 "Commanche" (and no notion of T/R swtiching!), and had little result; picked up an HW-16 which I used for years and had a lot of fun with. Prior to that time and after, I'd been messing with crystal sets and one-tube receivers. Unusual toys for a Hoosier gal in the '70s but nobody told me I couldn't, despite those Alfred P. Morgan titles (The BOY Electrician, indeed! hmpf!).

Mom's side of the family (four sisters, one brother) were all very much into hands-on arts & crafts, Dad's side (five brothers, one sister!) all into things technical, so working with one's hands was considered A Good Thing and as neither my brother (music teacher, now a minister) nor sister (artist, now teaching English and Remedial Everything) got the tech-bug, my parents were happy at least one child had. (This also allowed them to decide I was not Headed To A Bad End; bookish, shy and introverted--no, really--not to mention impossibly gawky, they'd about decided I'd end up an old maid living on dog food in a garret!) (It did take several years of low-paying radio jobs to get one of which they approved; but I'd got fed up--for reasons that now seem trivial--and moved out at the age of 18 anyway).

Started working in broadcasting (technical side mostly) in 1974 or so, and continue to this day, with a few short stints as test equipment tech in a factory and CATV line tech (yeech--I should'a waited tables at a truck stop, it's nicer work). Presently Chief Op/Sr. Tech - RF for WTHR-TV and WALV-LP in Indianapolis. I did manage to sneak in two whole semesters of college, but it didn't take; used to claim my 1st 'Phone (commercial) ticket was my degree but the FCC fixed *that* by killing the entire class of license! So now all I have is a BDIFY--"Been doin' it for years."

Hobbywise, I digressed into collecting old BC sets, and kept on building little tube receivers. When the first Novice expired, I was off 'til they extended the term to 10 years and made it retroactive; then got back on the air with the HW-16 and "upgraded" to a HW-9 when you could still buy Heathkits. Time went on, jobs changed, and that license ran out when I wasn't looking (probably had my head stuck in a CATV amplifier box, 20-odd feet in the air or neck-deep in mud at the time). Retested several years back and bought a s*1*d-st*t* imported xcvr.

It was *awful!* I thought the bands really were that much of a mess of noise and intermod (happened to be living downtown at the time, which only made it worse). So I didn't do much with ham radio for several years. Then I found Boatanchors, bought an HRO, and found out the problem

was the receiver; there was still plenty of FB radio around and it still sounded like it had in 1972--you just had to use a receiver that'd do the job.

Now the catch was, I still held a mere Novice. After misreading the band limits and having a perfectly nice and entirely extra-legal QSO on 3.58, I upgraded; went in after a General and walked out with Advanced and 20wpm CW credit! (Guess some of the professional work had rubbed off? Cheated on the CW, though--I'd set up an SX-28 at work and ran the shore stations constantly and the code just sank in).

Over the years, I'd amassed quite a collection of old-radio books and picked up a profound admiration for the old "Radio" magazine and associated publications. That's 1930's technology, folks, and it's when most of the future got invented. It makes good sense to me (a 1930s mind?), so that's what I work with.

The present main station is a homebrew breadboard single-6L6 transmitter and a Drake 2-B receiver (cheating, it's '50s but it works sooo well), with the HRO-5 as a back-up. Secondary setup is an HRO-7, HW-9, and KWM-2. Current restoration & construction projects are a very long list--an H-W Bandmaster and Millen 90800 head the "restore" list, while a Z-match ATU and 6C5-6L6 transmitter (metal cabinet and all, so fancy--TVI, y'know) lead "construction."

Work--both keeping WTHR-TV on the air and the prosiac housewife stuff--keeps me from getting on the air as often as I'd like. Preferred haunts are 7.05 and 7.06 mc, at least in the summer; 3.58 was pretty good last winter. At present all operation is CW and I have never had an SSB QSO--may try AM once the Bandmaster's running.

...And I still use a knife switch for T/R. They work pretty well! :)

73,
--Bobbi

KB9GKX "RJ" rbarmore@indy.net Roberta J. (Bobbi) Barmore
FISTS 3388 * ARRL * RSGB * WIA
Appreciator Of Vacuum-Tube Ham Gear and Vintage Keys

Date: Sat, 30 Aug 1997 11:57:21 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: All Electronics catalog on-line

Hi gang--

I just went to the All Electronics Web site and found that they had put their entire catalog on-line in the form of PDF files. You can download the whole thing in one 3.6MB chunk, or download departments (batteries, chokes, semiconductors, relays, etc.) one at a time, which is *much* faster.

Not much vintage stuff here (tho I think they have a tube socket or two) but I do a fair amount of silicon homebrewing as well and I buy a *lot* of stuff from them.

One thing I spotted while looking for C nicads was a 12V Duracell battery like a short, fat AA. Only \$1.50 each--put three in series and you have Bob's canonical 36 volts for a regen. Not sure how much current you can pull from these (or what their internal resistance is) but where else can you get a 36V B supply for \$4.50? Look for catalog item MN-21, page 16 of

the catalog.

Here's the URL:

<http://www.allcorp.com/index.html>

In other news, thunderstorms permitting, we're going to try the Junkbox Radio AM net on 6m this Sunday night, 7PM Arizona time, on 50.4. Crank 'em up and give a listen!

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Sat, 30 Aug 1997 12:20:58 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: Ceramic octal socket source

Hi gang--

I was looking through the Alltronics (distinct from All Electronics, as in my previous message) Web site and spotted NOS ceramic octal tube sockets, looks like still-packaged military spares. They're what I call the "crinkle ring" mount type; that is, you stick the socket through the hole in the chassis and then work this crinkly ring into the groove around the circumference of the socket. (Is there a technical term for this kind of mount?)

He wants \$5.95 each, which seems like a lot unless you don't have one and want to make that transmitter NOW...

Their part number is 97J001.

Look in:

<http://www.alltronics.com/newitem9.pdf>

I order a lot of stuff from these guys too, and have never had any trouble. They have a lot of tubes, (almost as many different types as AES) and they have a PDF file of their tube stock that you can download from their Web site.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Sat, 30 Aug 1997 15:36:29 EDT
From: kmlh@juno.com (kmlh @ juno.com)
Subject: Re: Secret origins)

On Sat, 30 Aug 1997 10:25:15 -0700 (PDT) John Kolb <jlkolb@cts.com> writes:

>On Sat, 30 Aug 1997 kmlh@juno.com wrote:
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>not 809.
>
>The power connector - pin F = 28V plate, pin E = heater. Don't see
>the gnd pin on the schematic, but an ohmmeter should find it OK.
>
>
>John K0lb KK6IL
>
Tnx John for the info. I would assume that the wire on H is then ground.
I just did not want to dig into the PTO since it is still new.
A phenolic strip has J-808 which you identified as the broadband 2-3 MHz
input and J-809 is the power connector. So the long cable with the BNC
Male must be J-810.

What is the actual oscillator frequency range...high or low side of the
IF ?? Can that be brought out as a seperate signal for a HB project by
opening up the can and rewiring...or is it more complicated?
I am not sure how to approach this PTO, the ultimate project is as part
of a 28MHz receiver IF for VHF/UHF use.
Modern xcvs just have too much phase noise and other problems to be
really effective IMO.

Tnx...Carl KM1H

Date: Sat, 30 Aug 1997 12:47:07 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: 22 1/2 volt battery source

Hi gang--

In cruising the American Science and Surplus catalog on the Web (can you
tell Jeff is looking for something?) I ran across Burgess 22 1/2V B
batteries for \$5 each. These are good size (roughly 2" X 2" X 3") and a
pair of them *will* run a regen in high style. (Assuming they're similar
to the Burgess batteries I had 30 years ago...)

In fact, one of them will give you some results with certain tubes. A

friend of mine had a 3V4 regen that worked on a single 22 1/2V B supply.

Their catalog number 25459.

Go to:

<http://www.sciplus.com/>

and use their index to go to the batteries section.

That's about all you'll hear from me this morning. Time to get out of here and get some work done.

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Sat, 30 Aug 1997 20:04:35 -0500 (CDT)
From: Bob Roehrig <broehrig@admin.aurora.edu>
Subject: Re: 22 1/2 volt battery source

On Sat, 30 Aug 1997, Jeff Duntemann wrote:

> In cruising the American Science and Surplus catalog on the Web (can you
> tell Jeff is looking for something?) I ran across Burgess 22 1/2V B
> batteries for \$5 each.

WOuldn't it be easier to use 2 or 3 9 volt jobs in series? Much easier to obtain and probably cheaper.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI
CIS: Data / Telecom Aurora University, Aurora, IL
630-844-4898 Fax 630-844-5530

Date: Sun, 31 Aug 1997 09:53:33 EDT
From: kmlh@juno.com (kmlh @ juno.com)
Subject: Re: Secret origins)

On Sat, 30 Aug 1997 19:10:45 -0700 (PDT) John Kolb <jlkolb@cts.com> writes:

>On Sat, 30 Aug 1997 kmlh@juno.com wrote:

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>ground.

>> I just did not want to dig into the PTO since it is still new. > A
>phenolic strip has J-808 which you identified as the broadband 2-3 MHz
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>input and J-809 is the power connector. So the long cable with the
>BNC >

>Male must be J-810. > > What is the actual oscillator frequency
>range...high or low side of the > IF ?? Can that be brought out as a

>seperate signal for a HB project by > opening up the can and
>rewiring...or
>is it more complicated? > I am not sure how to approach this PTO, the
>ultimate project is as part > of a 28MHz receiver IF for VHF/UHF use.
>>
>Modern xcvr's just have too much phase noise and other problems to be >
>really effective IMO.
>
>The oscillator tunes from 3.455 - 2.455 MHz. You could ignore the RF
>input, go inside the unit, and tap off the cathode of the 26D6,
>to get a clean sine wave, I guess, but I'd bet it would be at a
>fairly low level.
>
>The best bet might be to try to find a swap for a PTO from a R-390
>or R-388/51J? receiver, or similiar, if you cannot use it directly
>as a oscillator/mixer. The ARR-41/R-648 also is the single tube
>oscillator/mixer, which, I would expect, would not have quite as
>good a phase noise than the PTO's with oscillator and buffer amps,
>fed to a seperate mixer. Either, of course, should be much better
>than modern synthesizers.
>
>John

Tnx again for the info John. I would like to hear from anyone who has
built a receiver around any one of the various Collins style PTO's.

73...Carl KM1H

End of glowbugs V1 #101

%%%% GlowBugs %%%% GlowBugs %%%% GlowBugs %%%% GlowBugs %%%%

[AB4EL Ham Radio Homepage @ SunSITE](#)

Created by **Steve Modena, AB4EL**
Comments and suggestions to **modena@SunSITE.unc.edu**
